REDUCTION OF PAIN IN PATIENTS WITH LUMBAR SYNDROME

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Sažetak

Bol u donjem dio leda (BDDL) može ometati na sposobnost pojedinca za rad, da ima smislen i aktivan društveni život, i negativno utječe na ukupnu kvalitetu života. U posljednjih nekoliko godina, novi pristupi promatraju se kao alternativni tretmani za BDDL. Spinalna manipulativna terapija (SMT) je jedan od tih novih pristupa u akutno liječenje BDDL. Ipak, nedavna studija pokazala kontradiktorne rezultate u smislu učinkovitosti takvih alternativnih terapija. U ovoj studiji cilj je usporediti utjecaj SMT u kombinaciji sa standardne fizioterapije (SFT) u usporedbi samo sa SFT za liječenje kronične BDDL. Uradili smo randomiziranu, kontrolirana usporedba, dvije paralelnih grupa. Ukupno 66 ispitanika su bili upisani u studiju. Intervencije se sastojala od dva uzastopna SMT odvojena dva dana po koje je slijedila SFT za ukupno razdoblje od mjesec dana. Glavni metod mjerenja je bila razina intenziteta boli. Rezultati su pokazali da obje intervencije su umjereno učinkovit u upravljanju boli i invalidnosti u bolesnika s kroničnom BDDL, ali dodatkom na SMT se činilo da daje minimalnu prednost na standardno liječenje.

Abstract

Low back pain (LBP) can interfere with an individual's ability to work, have a meaningful and active social life, and negatively affects overall quality of life. In recent years, new approaches have been considered as alternative treatments for LBP. Spinal manipulative therapy (SMT) is one of these new approaches to acute LBP treatment. Still, recent studies have found contradicting results in terms of the effectiveness of such alternative therapies. This study aimed to compare the effect of SMT in combination with standard physical therapy (SPT) versus SPT alone to treat chronic LBP. A randomized, controlled, parallel group trial was undertaken. A total of 66 subjects were enrolled in the study. The intervention consisted of adding two consecutive SMT two days apart followed by SPT for a total period of one month. The main outcome measure was perceived level of pain intensity. Results showed that both interventions were moderately effective in managing pain and disability in patients with chronic LBP, but that the addition of a SMT seemed to add minimal supplemental benefit to standard treatment.

Key words: *LBP, manipulative, physical therapy, exercise*

Introduction

Low back pain (LBP) is a symptom that cannot be validated by an external standard. It is a disorder with many possible etiologies, occurring in many groups of the population, and with many definitions (Manchikanti, 2000). In fact, in most instances, the cause is difficult to understand, and only in a minority of cases does a direct relationship to some defined organic disease exist. LBP lacking a known etiology has been termed nonspecific LBP within the clinical arena. Nonspecific LBP is one of the most common physical ailments affecting millions of people worldwide, and constitutes a significant public health problem. LBP affects approximately, 60% - 80% of U.S. adults at some point in time during their lifetime, and up to

50% have back pain within a given year (Deyo et al., 1991). LBP can interfere with an individual's ability to work, have a meaningful and active social life, and negatively affects overall quality of life (Dunn & Croft, 2004).

Its usual course is rapid improvement; however, 5-10% of patients develop persistent low back symptoms (Dunn & Croft, 2004). Unfortunately, acute LBP has a propensity to relapse; consequently, most patients will experience multiple episodes during their life span. Although acute (and under some classifications, subacute) episodes that last up to three months are the commonest presentation of LBP, chronic LBP ultimately is more disabling and dispiriting because of the physical impairments it causes and its psychosocial effects. Chronic LBP, which translates into pain lasting for more than 3 months, has been caught up in medical controversies, especially about what treatments are most appropriate.

Physical therapy treatment has been, for many decades, the most standard treatment for chronic LBP. Yet, a lack of evidence for some types of physical therapy interventions, and a shortage of cost effectiveness data for treatment of LBP, has led to controversy and uncertainty within the medical and health allied professions (Rivero Arias et al., 2006). Therefore, despite being identified as a serious health concern, effective means of managing chronic LBP still remains controversial (Boswell et al., 2005; Boswell et al., 2007; Manchikanti et al., 2003; Watson et al., 2004). In recent years, and as a response to these concerns, new approaches have been considered as alternative treatments for LBP, specifically acute LBP. Spinal manipulative therapy is one of these new approaches to acute LBP treatment. Still, recent studies have found contradicting results in terms of the effectiveness of such alternative therapies (Assendelft et al., 2003; 2004; Bronfort et al., 2004; Margo, 2005). Several experts (Childs et al., 2004; Childs et al., 2003) have stated that these discrepant conclusions from clinical research of spinal manipulation therapy for acute LBP can be attributed to misclassification of patients.

Aim

The main purpose of the study was to evaluate the effectiveness of manipulative therapy in combination with standard physical therapy to treat chronic LBP compared to standard physical therapy alone.

Materials and methods

Inclusion criteria consisted of patient with complaints of chronic LBP that were between the ages of 21 and 65 years of age. Exclusion criteria consisted of the following: low back pain patients on follow up appointments, low back pain caused by systemic or organic diseases such as lupus, rheumatoid arthritis, cancers, among others; psychiatric disorders, including diagnosed chronic mayor depression, bipolar disorder, schizophrenia and fibromyalgia; pregnancy; acute severe pain needing immediate treatment or surgery; past back surgery, fractures, or osteoporosis; central nervous system involvement (upper motor neuron lesion); nerve root involvement as a consequence of a lumbar disc extrusion, or lumbar disc sequestration; and severely decreased deep tendon reflexes, severely decreased myotomal sensation, and severely decreased manual muscle test compared to contra lateral side. A total of 66 patients were included in this study, divided in two groups. Group B (n=33) underwent a treatment consisting of standard physical

therapy program that included TENS, diadynamic current and ultrasound and therapeutic exercises emphasizing muscle endurance, strength and stability combined with patient education in body mechanics, ergonomics at home and work, and includes a home exercise program. Group A (n=33) had the same physical therapy program combined with manipulations of the spinal vertebra. The intervention consisted of adding two consecutive SMT two days apart followed by SPT for a total period of one month.

For the assessment of the outcomes of the therapeutic process, we tested the intensity of pain before and one week after the treatment sessions and once again one month after the completion of the therapy course, using VAS. The VAS assigns numeric scores to the patients' perceived level of pain by measuring the length in millimeters from the no pain end of the scale to the patients' mark. The VAS is a 100 point scale that goes from zero, or no pain, to 100, which translates to worst pain imaginable.

Results and discussion

In order to determine if the combined treatment for LBP conferred an additional positive effect, in terms of reduction of pain intensity, two-sided two-independent sample *t*-tests were conducted. Differences in mean change in pain intensity after 1-week of treatment and at 1-month follow-up were compared between treatment groups. Table 1 shows that even though there were no statistically significant differences in mean change in pain intensity at 1-week after treatment or at 1-month follow-up between groups ($p = 0.218$ and $p = 0.146$, respectively), the combined treatment reported greater changes than the standard treatment group at 1-week after treatment (-14.67 ± 20.93 vs. -8.76 ± 17.47, respectively) and at 1-month follow-up (-17.48 ± 26.10 vs. -9.06 ± 20.04, respectively). In fact, the combined treatment group reported even lower levels of pain intensity at 1-month follow-up. The standard treatment group reported a reduction in pain intensity at 1-week after treatment; yet, change from 1-week after treatment to 1-month follow-up was not as marked.

Pain intensity at:	*Group A - Combined treatment (n=33)*	*Group B - Standard treatment (n=33)*	*Mean difference (95% CI)*	*p-value*
Changes at 1-week after treatment	-14.67 ± 20.93	-8.76 ± 17.47	5.91 (-3.57, 15.39)	0.218
Changes at 1-month follow-up	-17.48 ± 26.10	-9.06 ± 20.04	8.42 (-3.02, 19.87)	0.146

Table 1. *Differences in Changes in pain Intensity at 1-Week after Treatment, and at 1-Month Follow-up by Treatment Group * Two-sided two-independent samples t-test to detect differences in mean change in pain intensity score between groups*

The results of this study did not show that the combined treatment group had a greater statistically significant decrease in level of pain intensity when compared to the standard treatment group. Even though there was a non- statistically significant difference between groups, both groups exhibited a reduction on their pain intensity across time. However, the

combined therapy group presented with 10% greater reduction of pain intensity when compared to the standard group at one week after initiation of treatment. Typically, pain leads to movement dysfunction and significantly affects the health of those suffering from it (Simmonds, 2006). Therefore, these findings are of vast importance given that a reduction in pain may lead to initiation of physical activity at an earlier stage, and reduce its impact on the overall health of those afflicted.

Conclusion

Results obtained from the different outcome measures considered in this study suggest that both interventions were moderately effective in managing pain in patients with chronic LBP who participate in this study. Even so, the addition of a spinal manipulation intervention seemed to add a supplementary minimal enhancement to standard treatment one week after treatment begins. More importantly, it seems that the addition of a spinal manipulation intervention to the standard physical therapy program propelled improvements after the first week and towards longer follow-ups. Some investigators (Raney et al. 2007, Brenner et al. 2007) have reported that utilization of rehabilitative ultrasound imaging have revealed that there are immediate muscular changes in the muscles surrounding the low back that are suggestive of improved motor function. Consequently, it can be hypothesized that the sooner motor function is restored, the earlier the exercise program can progress.

This intervention program integrates therapeutic exercises emphasizing muscle endurance, strength and stability combined with patient education in body mechanics, ergonomics at home and work, and includes a home exercise program. Godges et al. (2008) assessed the effectiveness of an educational program integrated into conservative physical therapy. A total of 34 patients with LBP who reported high scores ($\geq$ 50) in the FABQ were randomized into a control and combined treatment group. The standard treatment group received physical therapy treatment 2-3 times a week until able to return to work. The combined treatment group received the same physical therapy intervention with the addition of an educational intervention. The educational intervention included a home exercise program, instruction in pain management and body mechanics. The investigators found that 100% of patients receiving the combined treatment return to work in 45 days or less while only 83.3% of the patients in the standard treatment group returned to work in 90 days or less. In addition, regression analysis revealed that scores in the FABQ and treatment group explained 15.7% and 14.8 % of the variability in days to return to work. Thus, educating patients in management of their condition and how to perform modifications throughout their activities efficiently reduced fear avoidance beliefs and consequently maladaptive behaviors that could have

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